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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/577,641	02/21/2007	Sheng Liu	920093.402USPC	9786

500 7590 03/16/2010

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EXAMINER	
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ART UNIT	PAPER NUMBER
2472	

MAIL DATE	DELIVERY MODE
03/16/2010	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/577,641	LIU ET AL.	
	Examiner	Art Unit	
	EMMANUEL MAGLO	2472	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE _3_ MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on _30 November 2009_.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) _1-26_ is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) _1-26_ is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

This office action is responsive to the amendment filed on 11/30/2009.

Claims 1-26 are pending in the Application.

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-26 are rejected under 35 U.S.C. 102(b) as being anticipated by Hamiti et al (US 6751209 B1).

Regarding claims 1, 12 and 13, Hamiti discloses a method and a system to process the method of radio transmission of real-time IP packets using header compression, comprising:

header-compressing a number of RTP packets, (fig. 1: for each RTP packet 11 shown header compression is carried out) , *to obtain header-compressed RTP packets having a plurality of different header compression lengths,* (packet 16 with a plurality of different header compression lengths), *wherein a single compressed header corresponds to a single RTP payload in each of the header-compressed RTP packets,* (shown in the figure, element 16 each of the containing separate header corresponds to an RTP payload: this corresponds to different compression values, col. 8 lines 41-42),

pre-configuring header compression lengths and length types required by the system, (fig. 5, note the compressed RTP header: col. 7 lines 1-6: field 51 indicates the type T; correspondingly field 53 indicates the length), *and*

PDU-size adapting the plurality of different header compression lengths of the header-compressed RTP packets, so as to comply with said lengths and length types required by the system, (col. 7 lines 1-6 indicates the *lengths and length types for,* if T=0, the last octet 56 is not included and the last six bits 53 of the first octet are set to zero, used for some other purpose, e.g. for CRC check, or used for an abbreviated time-stamp. If T=1 the compressed header shall include the length octet and the bits 53 and the last octet 56 are used to indicate the length of the RTP payload. Furthermore, fig. 5 field 56 represents the data block containing the compressed header: this corresponds a Packet Data Unit (PDU) contains an integral number of octets, a header part and a data part, col. 9 lines 50-54).

Regarding claim 2, Hamiti discloses *marking a compressed header and an RTP payload,* (The format of the compressed header follows the one presented in connection with fig. 5; thus as indicated, col. 7 lines 8-9: field 52 indicates the marker bit of the RTP header) *and separating the compressed header from the RTP packet based on said marking before PDU-size adapting the header-compressed RTP packet, and then PDU-size adapting the separated compressed header,* (as illustrated in fig. 3, considering the RTP, col. 5 lines 20-22, field 314 includes a marker bit that is optionally used to mark important events in the packet stream, for instance, the beginning of a speech burst, or a last packet in a video frame. If the marker bit 314 is used it needs to be transmitted in the compressed header).

Regarding claim 3, Hamiti discloses *after separating the compressed header from the RTP payload based on said marking, further dividing the RTP payload into blocks of different error sensitivities based on the RTP payload format information, then PDU-size adapting the separated compressed header,* (col. 5 lines 20-22, field 314 includes a marker bit that is optionally used to mark important events in the packet stream, for instance, the beginning of a speech burst, or a last packet in a video frame).

Regarding claims 4 and 15, Hamiti discloses *after dividing the RTP payload into blocks of different error sensitivities, combining the compressed header with at least one data blocks of the RTP payload, then PDU-size adapting the data blocks containing said compressed header*, (col. 8 lines63-67 and col. 9 lines 1-14: a delay packet for a particular compression sequence (thus having a particular error sensitivity), may be combined with the payload for, a packet belonging to a compression sequence preceding the precedent compression sequence would not be regenerated correctly anymore and therefore such packets are preferentially managed already in the compressor. The flow chart of FIG. 7 presents an example of such a filtering algorithm that can be added to the invented method in the compressor side for managing situations with much delayed packets)

Regarding claims 5 and 17, Hamiti discloses *applying a UEP mechanism to the separated compressed header and the RTP payload, or the separated compressed header and the data blocks of the RTP payload, or the data blocks containing the compressed header and the remaining RTP payload data blocks,* (col. 5 lines 37-43: indicates unequal error protection mechanism that applies to RTP packet: this field does not have to be transmitted over the transmission link that has a strong error protection mechanism or means to detect transmission

errors (e.g. lower protocol layer checksums). Transmission of such information can be done using acknowledged mode or strong error protection).

Regarding claim 6, Hamiti discloses *mapping the separated compressed header and the RTP payload, or the separated compressed header and the data blocks of the RTP payload, or the data blocks containing the compressed header and the remaining RTP payload data blocks to different RLC entities for transmission,* (fig. 1 divided into an appropriate number of RLC blocks each containing a separate header)

Regarding claims 7 and 18, Hamiti discloses *transmitting the compressed header and the RTP payload, or the separated compressed header and the data blocks of the RTP payload, or the data blocks containing the compressed header and the remaining RTP payload data blocks on the same transmission time interval, and configuring corresponding transport channels thereof as "coordinated dedicated transport channels,* (In accordance with its program, the microprocessor uses the RF block 103 for transmitting and receiving messages on the radio path, (a dedicated channel))

Regarding claim 8, Hamiti discloses *receiving and extracting, at a receiving end, the compressed header and the RTP payload, or the separated compressed header and the data blocks of the RTP payload, or the data blocks containing the compressed header and the remaining RTP payload data blocks, from RLC entity SDU corresponding to the compressed header and the RTP payload, or the separated compressed header and the data blocks of the RTP payload, or the data blocks containing the compressed header and the remaining RTP payload data blocks, respectively,* (fig. 9: the compressed packet is received at the decompressor (step 92), when changes are detected, a new SNDCP functionality will extract from the new header only the

changed no-change fields (step 96), update them to the stored state of compression (step 97), transmit said values to the SGSN (step 98) and update the values to the state of compression stored in the SGSN as well (step 98).

Regarding claim 9, Hamiti discloses *combining the extracted compressed header and the RTP payload, or the separated compressed header and the data blocks of the RTP payload, or the data blocks containing the compressed header and the remaining RTP payload data blocks, into a complete RTP packet,* (step 96 fig. 9, doing the extraction. Note fig. 1 that number of RLC blocks each containing a separate header)

Regarding claim 10, Hamiti discloses t*he lengths and length types required by the system depend on a tradeoff between transmission efficiency and TFCI decoding reliability*, (fig. 5. note the TFCI is transferred across the air interface and allows the receiving layers to identify the current valid Transport Format Combination, thus as shown in fig. 3, col. 5 lines 12-16, field 315 indicates the payload type and is constant for one type of data. Generally, the contributing source and synchronization source are constant throughout the transmission over the air interface, and therefore the field 318 will remain constant)

Regarding claims 11 and 19, Hamiti discloses the RLC entity is a TM mode RLC entity, (fig. 5).

Regarding claim 14, Hamiti discloses *after separating the compressed header from the RTP payload, PDU-size adapting the compressed header, such that the plurality of different header compression lengths obtained when header- compressing the RTP packet are adapted to lengths and length types required by the system, and then making the PDU-size-adapted compressed header and the RTP payload to respectively form PDCP layer PDUs before mapping them into different RLC entities*, (fig. 5 field 56 represents the data block containing the compressed

header: this corresponds a Packet Data Unit (PDU) contains an integral number of octets, a header part and a data part, col. 9 lines 50-54).

Regarding claim 16, Hamiti discloses combining the separated compressed header with at least one data blocks of the RTP payload, and PDU-size adapting the data blocks containing said compressed header, (fig. 5 field 56 represents the data block containing the compressed header: this corresponds a Packet Data Unit (PDU) contains an integral number of octets, a header part and a data part, col. 9 lines 50-54).

Regarding claim 20, Hamiti discloses *a method of receiving real-time IP packets using header compression, wherein a compressed header of the header-compressed packet,* (shown in the figure, element 16 each of the containing separate header corresponds to an RTP payload: this corresponds to different compression values, col. 8 lines 41-42),

is separated from an RTP payload thereof at the transmitting end to form different PDCP layer PDUs that are transmitted on different RLC entities, and wherein a single compressed header corresponds to a single RTP payload in each of the header-compressed RTP packets, said method comprising:

receiving and extracting the compressed header and the RTP payload from SDUs of the RLC entities, (fig. 9: the compressed packet is received at the decompressor (step 92), when changes are detected, a new SNDCP functionality will extract from the new header only the changed no-change fields (step 96), update them to the stored state of compression (step 97), transmit said values to the SGSN (step 98) and update the values to the state of compression stored in the SGSN as well (step 98), *and*

combining the extracted compressed header with the RTP payload, (col. 8 lines63-67 and col. 9 lines 1-14: a delay packet for a particular compression sequence (thus having a particular error sensitivity), may be combined with the payload for, a packet belonging to a compression sequence preceding the precedent compression sequence would not be regenerated correctly anymore and therefore such packets are preferentially managed already in the compressor. The flow chart of FIG. 7 presents an example of such a filtering algorithm that can be added to the invented method in the compressor side for managing situations with much delayed packets)

Regarding claim 21, Hamiti discloses a system of transmitting a real-time IP packet using header compression, comprising:

a header compression unit to header-compress RTP packets and mark a compressed header and an RTP payload, (The format of the compressed header follows the one presented in connection with fig. 5; thus as indicated, col. 7 lines 8-9: field 52 indicates the marker bit of the RTP header), *wherein a single compressed header corresponds to a single RTP payload in each of the header-compressed RTP packets,* (shown in the figure, element 16 each of the containing separate header corresponds to an RTP payload: this corresponds to different compression values, col. 8 lines 41-42),

a radio link adaptation unit to separate the compressed header from the RTP payload based on said marking, to respectively form PDCP layer PDUs before mapping the respective PDCP layer PDUs to different RLC entities, and a transmitter to transmit the separated compressed header and RTP payload, (fig. 3, considering the RTP, col. 5 lines 20-22, field 314 includes a marker bit that is optionally used to mark important events in the packet stream, for instance, the beginning of a speech burst, or a last packet in a video frame. If the marker bit 314

is used it needs to be transmitted in the compressed header; furthermore, col. 4 lines 58-64, the access network SNDC function provides to the network layer a service for transferring a minimum amount of data between the SGSN and MS , (transmitters) through different compression techniques.

<u>Regarding claim 22</u>, Hamiti discloses a *system of receiving a real-time IP packet using header compression,* (fig. 10 and col. 12 lines 33-55: a mobile terminal of a mobile communication equipment), *wherein a compressed header of the header-compressed packet is separated from an RTP payload thereof at the transmitting end to form different PDCP layer PDUs that are transmitted on different RLC entities, wherein a single compressed header corresponds to a single RTP payload in each of the header-compressed RTP packets,* (shown in the figure, element 16 each of the containing separate header corresponds to an RTP payload: this corresponds to different compression values, col. 8 lines 41-42), *said system comprising*:

receiving and extracting unit for to receive and extract the compressed header and the RTP payload from SDUs of the RLC entities, (fig. 9: the compressed packet is received at the decompressor (step 92), when changes are detected, a new SNDCP functionality will extract from the new header only the changed no-change fields (step 96), update them to the stored state of compression (step 97), transmit said values to the SGSN (step 98) and update the values to the state of compression stored in the SGSN as well (step 98), *and*

radio link adaptation unit for combining the extracted compressed header with the RTP payload, (col. 12 lines 33-55:the microprocessor uses the RF block 103 for transmitting and receiving messages on the radio path.)

Regarding claim 23, Hamiti discloses an RTCP packet scheduling method, comprising: *monitoring whether or not the bandwidth requirement of the RTP packet exceeds a predetermined value*, (col. 7 lines 31-65), *if the bandwidth requirement of the RTP packet exceeds the predetermined value and there is an RTCP packet to be transmitted*, (col. 7 lines 31-65), *buffering the RTCP packet*, (col. 4 lines 64-66, a number of the header data fields that remain constant during the data transfer being stored in the decompressor), *and continuously monitoring the bandwidth requirement of the RTP packet, and transmitting the RTCP packet when the bandwidth requirement is lower than the predetermined value*, (col. 9 lines 15-37: no packet transmitted due to delay conditions, the packet is deemed useless).

Regarding claim 24, Hamiti discloses *the bandwidth requirement being lower than the predetermined value comprises the case where the compression rate of the RTP packet is so high that the bandwidth requirement is lower than the predetermined value*, (col. 7 lines 66-67 and col.8 lines 1-30).

Regarding claim 25, Hamiti discloses the bandwidth requirement being lower than the predetermined value comprises the case where no RTP packet is transmitted, (col. 9 lines 15-37: no packet transmitted due to delay conditions, the packet is deemed useless)

Regarding claim 26, Hamiti discloses an RTCP packet scheduling system, comprising: *bandwidth monitoring means for monitoring whether or not the bandwidth requirement of the RTP packet exceeds a predetermined value,* (col. 7 lines 31-65), *judging means for judging, whether the bandwidth requirement of the RTP packet exceeds the predetermined value and there is an RTCP packet to be transmitted,* (col. 7 lines 31-65), *buffering means for buffering the RTCP packet, in response to the result of the judging means that the bandwidth requirement of*

the RTP packet exceeds the predetermined value, (col. 4 lines 64-66, a number of the header data fields that remain constant during the data transfer being stored in the decompressor)*; and transmitting means for transmitting the RTCP packet, in response to the result of the judging means that the bandwidth requirement of the RTP packet does not exceed the predetermined value,* (col. 9 lines 15-37: no packet transmitted due to delay conditions, the packet is deemed useless).

Response to Arguments

With regards to clams 1and 12

Applicant argues that *Hamiti does not disclose "pre-configuring header compression lengths and length types required by the system" as recited in claims 1 and 12.*

Examiner disagrees and submits that Applicant appears to argue limitations not claimed:

“the header size of the ROHC header- compressed packet from the upper layer is changeable in a wide range, thus a huge TFS must be employed to cover all the possible packet header sizes, which reduces the reliability of TFCI decoding and complicates the physical layer processing” and

“adapts the header-compressed packet or the compressed header or the data blocks containing the compressed header to several pre-configured size-fixed length”.

Instead the claimed language requires pre-configuring header compression lengths and length types disclosed in fig. 5: length types conveyed in field 51 represented by T=0, and T=1; there is also disclosed lengths of compressed header, for the header fields are compressed into (different) abbreviated fields, each of which has length chosen during the compression sequence,

col. 6 lines 53-67 and col. 7 lines 1-7. Therefore, Examiner submits that Hamiti discloses the claimed limitations.

With regards to *"PDU-size adapting the plurality of different header compression lengths of the header-compressed RTP packets",* Applicant also argues that Hamiti fails to teach

"the compressed header- packets are adapted to different sizes (i.e., lengths) as required by the system, so as to facilitate physical layer processing".

Examiner disagrees and submits that, col. 6 lines 53-67, the header fields compressed into abbreviated fields (obtained during the compression sequence), have different lengths chosen to provide transmission of the information; therefore, the compressed header packets are adapted to various lengths.

<u>With regards to claims 13 and 21</u>

Applicant argues that Hamiti does not disclose *"marking a compressed header and an RTP payload".*

Examiner disagrees and submits that, as required by the claims, field 52 (fig. 5) indicates the marker bit of the compressed RTP header, col. 7 lines 9-11. Furthermore, field 314 (fig. 3) includes the marker bit of the RTP payload: col. 5 lines 18-22. Therefore, Examiner submits that Hamiti teaches the claimed limitations.

Applicant further argues that Hamiti does not disclose *"separating the compressed header from the RTP payload based on said marking, to respectively form PDCP layer PDUs before mapping them to different RLC entities.*

Examiner disagrees and submits that, in the compressed RTP header shown in figure 5, including the marker 52, the compressed header shall include the length octet and the bits 53 and the last octet 56 are used to indicate the length of the RTP payload.

<u>With regards to claims 20 and 22</u>

As required by the claimed limitations, Examiner submits that fig. 1 still teach a compressed *header of the header-compressed packet,* (Real Time Protocol (RTP packet) 11 is put into a User Data Protocol (UDP) packet 12 and further to an Internet Protocol (IP) packet 13; fig. 5 is the structure of the compressed header), *is separated from an R TP payload,* (the compressed header shall include the length octet and the bits 53 and the last octet 56 are used to indicate the length of the RTP payload), *thereof at the transmitting end to form different PDCP layer PDUs that are transmitted on different RLC entities,* (the Packet 13 is further encapsulated using Sub-Network Dependent Convergence Protocol (SNDCP) 14 and Logical Link Control protocol (LLC) into an LLC block 15, which is divided into an appropriate number of RCL blocks each containing a separate header: col. 4 lines 24-31).

<u>With regards to claims 23 and 26</u>

Applicant furthermore argues that Hamiti does not disclose "*monitoring whether or not the bandwidth requirement of the RTP packet exceeds a predetermined value*" and "*if the bandwidth requirement of the RTP packet exceeds the predetermined value and there is an RTCP packet to be transmitted, buffering the RTCP packet*".

Examiner erroneously cited col. 7 lines 31-65 instead of col. 4 lines 31-65. However examiner maintains that Hamiti teaches monitoring the bandwidth requirement, because as described block 15, which is divided into an appropriate number of RCL blocks the bandwidth utilization around

33% when a G723.1 encoder is used a compressed value for a header data identifies the data packet in a compression sequence; A number of the header data fields that remain constant during the data transfer are stored (or buffered) in the decompressor.

Conclusion

3. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to EMMANUEL MAGLO whose telephone number is (571)270-1854. The examiner can normally be reached on Monday - Thursday 7:00 - 4:30 and every other Friday 7:00 - 3:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, William Trost can be reached on (571)272-7872. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/William Trost/
Supervisory Patent Examiner, Art Unit 2472

Emmanuel Maglo
Patent Examiner
March 16, 2010